AMENDMENTS TO THE CLAIMS:

Please amend the claims as shown in the listing of the claims below. The listing below replaces all prior listings.

1-433 (Canceled)

434. (Previously presented) A nanoparticle-oligonucleotide conjugate comprising a nanoparticles having oligonucleotides attached thereto, each oligonucleotides having a covalently bound polythiol functional group that can bind to the nanoparticles.

435. (Canceled)

436. (Previously presented) A nanoparticle-oligonucleotide conjugate comprising a nanoparticles having oligonucleotides attached thereto, each oligonucleotides having a covalently bound polythiol functional group that can bind to the nanoparticles, at least some of the oligonucleotides having a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide.

437. (Currently amended) The conjugate of claim 436 wherein the oligonucleotides are further present at a surface density sufficient so that the ~~conjugates are~~ conjugate is stable.

438. (Previously presented) The conjugate of claim 437 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 10 picomoles/cm^2

439. (Previously presented) The conjugate of claim 438 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of at least 15 picomoles/cm^2.

440. (Previously presented) The conjugate of claim 439 wherein the oligonucleotides are present on surface of the nanoparticles at a surface density of from about 15 picomoles/cm^2 to about 40 picomoles/cm^2.

441. (Previously presented) The conjugate of claim 436 wherein the nanoparticles are metal nanoparticles or semiconductor nanoparticles.

442. (Previously presented) The conjugate of claim 441 wherein the nanoparticles are gold nanoparticles.

443. (Previously presented) The conjugate of claim 436 wherein the oligonucleotides comprise at least one type of recognition oligonucleotides, the recognition portion having a sequence complementary to at least one portion of the sequence of a nucleic acid or another oligonucleotide.

444. (Previously presented) The conjugate of claim 443 wherein each of the recognition oligonucleotides comprising a spacer portion and a recognition portion, the spacer portion being designed so that it is bound to the nanoparticles,

445. (Previously presented) The conjugate of any of claims 434 or 436, wherein the polythiol is a trithiol.

446. (Previously presented) The conjugate of claim 444 wherein the spacer portion has a moiety covalently bound to it, the moiety comprising a polythiol functional group through which the spacer portion is bound to the nanoparticles.

447. (Currently amended) The conjugate of claim ~~442~~ 444 wherein the spacer portion comprises at least about 10 nucleotides.

448. (Previously presented) The conjugate of claim 447 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

449. (Previously presented) The conjugate of claim 448 wherein the bases of the nucleotides of the spacer portion are all adenines, all thymines, all cytosines, all uracils or all guanines.

450. (Currently amended) The conjugate of claim ~~436~~ 444 further comprising a type of diluent oligonucleotides.

451. (Previously presented) The conjugate of claim 450 wherein the diluent oligonucleotides contain about the same number of nucleotides as are contained in the spacer portions of the recognition oligonucleotides.

452. (Previously presented) The conjugate of claim 451 wherein the sequence of the diluent oligonucleotides is the same as that of the spacer portions of the recognition oligonucleotides.

453. (Canceled)

454. (Previously presented) A method of binding oligonucleotides to nanoparticles to produce nanoparticle-oligonucleotide conjugates, the method comprising:

providing oligonucleotides having covalently bound polythiol functional groups that can bind to nanoparticles; and

contacting the oligonucleotides and the nanoparticles under conditions effective to allow at least some of the oligonucleotides to bind to the nanoparticles to produce the nanoparticle-oligonucleotide conjugates.

455. (Previously presented) The method of claim 454 wherein the nanoparticles are metal nanoparticles or semiconductor nanoparticles.

456. (Previously presented) The method of claim 455 wherein the nanoparticles are gold nanoparticles.

457. (Currently amended) The method of claim 454 wherein[,] the oligonucleotides comprising at least one type of recognition oligonucleotides, each of the recognition oligonucleotides comprising a spacer portion and a recognition portion, the spacer portion having

the covalently bound polythiol functional group.

458. (Previously presented) The method of claim 457 wherein the spacer portion comprises at least about 10 nucleotides.

459. (Previously presented) The method of claims 458 wherein the spacer portion comprises from about 10 to about 30 nucleotides.

460. (Previously presented) The method of claims 459 wherein the bases of the nucleotides of the spacer are all adenines, all thymines, all cytosines, all uracils, or all guanines.

461. (Previously presented) The method of claim 457, wherein the oligonucleotides further comprising a type of diluent oligonucleotides and contacting the oligonucleotides with the nanoparticles under conditions effective to allow at least some of each of the types of oligonucleotides to bind to the nanoparticles to produce the nanoparticle-oligonucleotide conjugates.

462. (Previously presented) The method of claim 461 wherein the diluent oligonucleotides contain about the same number of nucleotides as are contained in the spacer portions of the recognition oligonucleotides.

463. (Previously presented) The method of claim 462 wherein the sequence of the diluent oligonucleotides is the same as the sequence of the spacer portions of the recognition oligonucleotides.

464. (Previously presented) The method of claim 457 wherein the oligonucleotides comprise at least two types of recognition oligonucleotides.

465-484 (Canceled)

485. (Previously presented) An oligonucleotide having a covalently bound polythiol functional group.

486. (Canceled)

487. (Currently amended) The oligonucleotide of claim ~~454~~ 485 wherein the polythiol is a trithiol.

488. (Previously presented) The oligonucleotide of claim 485 wherein the polythiol is a trithiol.